



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/524,135

04/05/2006

Juro Ozeki

10995-2330

2415

22852

7590

09/28/2010

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

NILAND, PATRICK DENNIS

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

09/28/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/524,135	Applicant(s) OZEKI ET AL.	
	Examiner Patrick D. Niland	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1796

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/15/09 has been entered.

The amendment of 12/15/09 has been entered. Claims 1, 3, and 5-6 are pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 5332784 Shiraki et al. in view of US Pat. No. 4433114 Coran et al., EP 673975 Inoue et al., US Pat. No. 3324074 McManimie, US Pat. No. 6635700 Cruse et al., and US Pat. No. 4427452 Jeffs.

Shiraki et al. discloses mixtures of polyphenylene ethers, polymers including styrene based thermoplastic elastomers modified with imidazolidinone compound in the instantly claimed amounts at the abstract; column 4, lines 45-53; column 6, line 33 to column 8, line 40; column 9, lines 22-62, particularly 53-60; column 12, lines 16-24; column 16, lines 19-68; column 17, lines 11-12; column 20, lines 53-68, which encompasses the instantly claimed polyphenylene ether based resin; column 21, lines 1-14 and 45-68; column 22, lines 1-38, particularly 20-38, which encompasses the instantly claimed amounts of components (a) and (b); column 25, lines 51-54,

Art Unit: 1796

which encompasses the instantly claimed clay fillers, and lines 57 of which "other additives" encompasses the well known flame retarder additives; and the remainder of the document.

It would have been at least obvious to one of ordinary skill in the art at the time of the instant invention to use the above discussed combinations of ingredients and amounts thereof because they are encompassed by Shiraki et al., exemplified and would have been expected to give the properties disclosed by Shiraki et al..

Shiraki et al. does not disclose the instantly claimed surface treatment nor the flame retardant of claim 5.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the clay filler of Shiraki et al. treated with the compounds of the instant claims 1 and 3 because they are broadly encompassed by Shiraki et al. by the broad recitation of "filler" and the general recitation of "clay" and such fillers are shown by Coran to be known for improved reinforcing properties to rubber compositions (Coran, column 17, lines 50-58), and this improved reinforcement would have been expected in the composition of Shiraki et al. and the clays exemplified by Coran have the instantly claimed particle size of claim 6 (column 17, lines 55-62 of Coran). Furthermore, Jeffs (the entire document, particularly the abstract; column 1, lines 13-20 and 68; column 10, lines 10-55, particularly the mercapto of lines 14-15; column 3, lines 41-45; and column 4, lines 55-63, noting the increases in compression and tension sets); Cruse (the entire document, particularly the abstract; column 1, lines 15-25; column 2, lines 56-65; column 3, lines 20-30 and 67; column 5, lines 21-52; column 13, lines 37-43 and 55-62; column 14, lines 57-67; column 15, lines 30-34; column 18, lines 3-7; column 26, lines 62-64, noting the increase in reinforcement properties; and column 32, lines 24-30), McManimie (the

Art Unit: 1796

entire document, particularly column 1, lines 16-32), and Inoue (the entire document, particularly noting that the coupling agents therein are known to increase tensile strength of polyphenylene ether compositions, particularly the abstract; page 2, lines 1-55, particularly 47, noting the mercapto group; page 5, lines 50-58, particularly noting the mercapto silanes and that these are also known for coating fillers and act as coupling agents for fillers) taken together show that the instantly claimed silane compounds are known in the art as coupling agents, the coupling agents are known to bond the filler to the polymer which gives increased strength, and thereby increased impact resistance is expected of the rubbery elastomeric polymers of Shiraki due to the increased strength imparted by the curing reaction of fillers containing multiple mercapto groups, which are shown by the above cited prior art to bond with the rubbers of Shiraki and to increase tensile strength in polyphenylene ether compositions, such that they are expected to increase the impact resistance of the rubbers of Shiraki due to the crosslinking imparted by the coupling agents on the mercaptosilane treated clays of Coran and the improved reinforcement taught by Coran for the NUCAP clays therein (column 17, lines 50-53) are therefore expected and explained by the totality of the teachings of the above cited prior art. Since there will clearly be more covalent bonds attaching the clays to the polymer matrix of Shiraki when the clays are treated with functional silanes, such as those of Coran, as expected from the totality of the above cited prior art, it will require more energy to break the polymer matrix, which translates to increased impact resistance, particularly for elastomers, which are known to be impact resistance due to their elasticity. This crosslinking reaction of all of the mercapto groups attached to the mercapto functional clays gives vulcanization, due to the above established reaction of mercapto groups with the polymers of Shiraki, which vulcanization is well known for improving the physical

Art Unit: 1796

properties of rubbers, such as those of Shiraki, which is also rationale for expecting the argued increased impact resistance.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the compound of the instant claim 5 in the broad amount range claimed because the general class of compounds are disclosed at column 25, line 57 and column 29, lines 20-23 of Shiraki et al. and using larger amounts, which are encompassed by the lack of limits on the amounts of such additives by Shiraki et al., would have been expected to give greater stabilization.

Arguments related to only the examples of Shiraki are not commensurate in scope with the full teachings of Shiraki and the above rejection. These arguments are therefore not persuasive. Arguments relating to Coran alone are not commensurate in scope with its use in the above rejection and are therefore not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). These arguments do not address the purpose for which Coran was cited.

Arguments relating to adding clay to polyphenylene ether alone is not commensurate in scope with the above rejection. Shiraki adds the clay to polyphenylene ether and the instantly claimed imidazolidinone modified styrene thermoplastic elastomer, which elastomer will improve impact properties due to the nature of elastomers seen when they are struct with an impact blow, e.g. they bounce back. These arguments do not address the cited prior art.

Arguments to the various argued examples do not address the above rejection, which is not limited to these examples. These examples are also not commensurate in scope with the instant claims and the cited prior art.

Arguments relating to Shiraki and Coran being distinct from each other do not rebut the above obviousness rationale. If they were not distinct they would be equivalent to each other. Then we would not have 35 USC 103, if references were required to be equivalents. The above rationale for combining the references is proper under *Graham v. Deere* and *KSR*. See MPEP 2141. The reinforcing properties obtained from treating clays, as taught by Coran, is equally expected in Shiraki's compositions by the ordinary skilled artisan. No reason is seen why this would not be. Coran is not cited for the combination of the instantly claimed A and B. Shiraki is. Shiraki also teaches the clay fillers and the typical treatments of fillers, including the treatment taught by Coran, are expected to give their typical results to the fillers of Shiraki also. This does not use impermissible hindsight. Again, see MPEP 2141, particularly the *KSR* decision cited therein. The above cited motivation to combine Shiraki and Coran is a clearly articulated reasons why the claimed invention would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention.

The Yamaguti declaration of 5/5/09 has been fully considered. The applicant's arguments have been fully considered.

The instant claims recite no properties, including the declaration's drop impact strength, gloss, IZOD impact values, and elongation at break. It would seem that these properties can be materially affected by modulus, which is materially affected by various parameters of the compositions, including ingredient amounts, particulars of the ingredients, including molecular

Art Unit: 1796

weights, degree of treating imidazolidinone, and other properties. The declaration examples are not commensurate in scope with the instant claims and the cited prior art in these regards therefore. The declaration is not persuasive therefore. The declaration uses only one set of amounts. It is not seen that all of the amounts encompassed by both the instant claims and the cited prior art give the reported results. The declaration examples are not commensurate in scope with the instant claims and the cited prior art in these regards therefore. The declaration is not persuasive therefore. It cannot be determined that the declaration's results will necessarily transfer to the other composition properties, including amounts and ingredient particulars, encompassed by both the instant claims and the cited prior art because chemistry is an unpredictable art. The instant claims and the cited prior art are not limited to the declaration's aminosilane treated filler. See the instant claim 3 and Coran, column 17, lines 50-62. It is expected that the type of surface treatment and particle size materially affect the declaration properties. In any event, the examiner cannot determine whether the declaration's reported results would occur within the full scope of the instant claims due to unpredictable nature of the chemical arts. The examiner cannot tell if there are any differences attributable to the method of making the declaration's examples because the specifics of the declaration's methods are not seen. The methodology is expected to materially affect the reported properties. Arguments to different elastomers are not persuasive because the prior art teaches the instantly claimed elastomers.

The strengthening effects attributable to the filler treatment per the teachings of Coran noted above are expected to give improved physical properties such as drop impact strength, IZOD impact values, and elongation at break per the teachings of Coran.

The applicant's arguments regarding improvements due to NUCAP being relative to no filler at all are not supported by the disclosure of Coran. The improvements are attributed to the treated filler per se. As such it is clear that the treated fillers give the reported improvements. These improvements are expected in the compositions of Shiraki, as stated above. The skilled artisans understand the treatments to be important in the properties attributable to the filler or else they would not undergo the expense of treating the fillers and the treatments will clearly give improved compatibility of the fillers with the resins due to increase of similarities of polarities of the filler to the resin, thereby clearly creating more van der Waals bonds, ionic bonds, and hydrogen bonds and potentially covalent bonds depending on the nature of the treatment, resin and filler, and the method of combining the ingredients. These bonds necessarily increase the strength and physical properties due to the increased amount of energy required to break these bonds that is proportional to the number and type of bonds formed. "Reinforcing" is also noted with regard to the fillers of Shiraki. The skilled artisan would understand that the fillers of Shiraki, e.g. clay that is hydrophilic relative to the resins, would not be as compatible with the hydrophobic resin as clay that is treated with hydrophobic organic compounds, such as the coupling agents of Coran. The untreated clays are therefore expected to not have as many different bonds with the resin. The improved properties of Coran is therefore expected with respect to both no filler and untreated filler, as would be appreciated by the ordinary skilled artisan and their understanding of the function of the surface treatments of Coran.

The applicant's arguments have been fully considered along with the Yamaguti declaration of 12/15/09. However, they are not persuasive for the above cited reasons,

Art Unit: 1796

particularly the newly cited prior art showing that the argued increased impact resistance due to use of functional silane treatment of the clays is expected in view of the well known action of “coupling agents” in filler/polymer systems, which action, e.g. formation of covalent bonds between reinforcing filler and polymer matrix, is expected to increase impact resistance for the above discussed reasons.

There is no showing of unexpected results commensurate in scope with the instant claims and the cited prior art. The applicant’s arguments have been fully considered but are not persuasive for the above reasons. This rejection is therefore maintained for the above reasons.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Friday from 10 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/524,135
Art Unit: 1796

Page 10

/Patrick D Niland/
Primary Examiner
Art Unit 1796